HMA Warranties Seminar for the Oregon and Washington DOT's

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HMA Warranties

1. FHWA Perspective
2. State DOT Perspective
3. Warranty Development Process
4. Ingredients for Specification Development
5. What is Specified by the Agency in Warranty Specifications

1. FHWA Perspective

- FHWA Fully Supports Warranty Process
- Warranties are promoted together with other Innovative Contracting Options such as: Cost+Time, Lane Rental, Design-Build, Design-Build-Warranties
- Warranty approvals on the NHS require FHWA Division action. No longer SEP-14 with HQ approval

FHWA Perspective- Con't

- Warranty Specifications need to ensure shared risk by the DOT and the Contractor
- Contractor cannot be held responsible for items that they don't have control over
- Maintenance Items shall not be included

FHWA Perspective- Con't

- Used by numerous DOT's
- MRC Warranty Usages: Indiana, Wisconsin, Michigan, Ohio, and Illinois
- FHWA Division Contacts

2. State DOT Perspective

- No Legislative requirements in Indiana
- Warranties are just another “tool” step in the quality ladder in improving HMA pavements

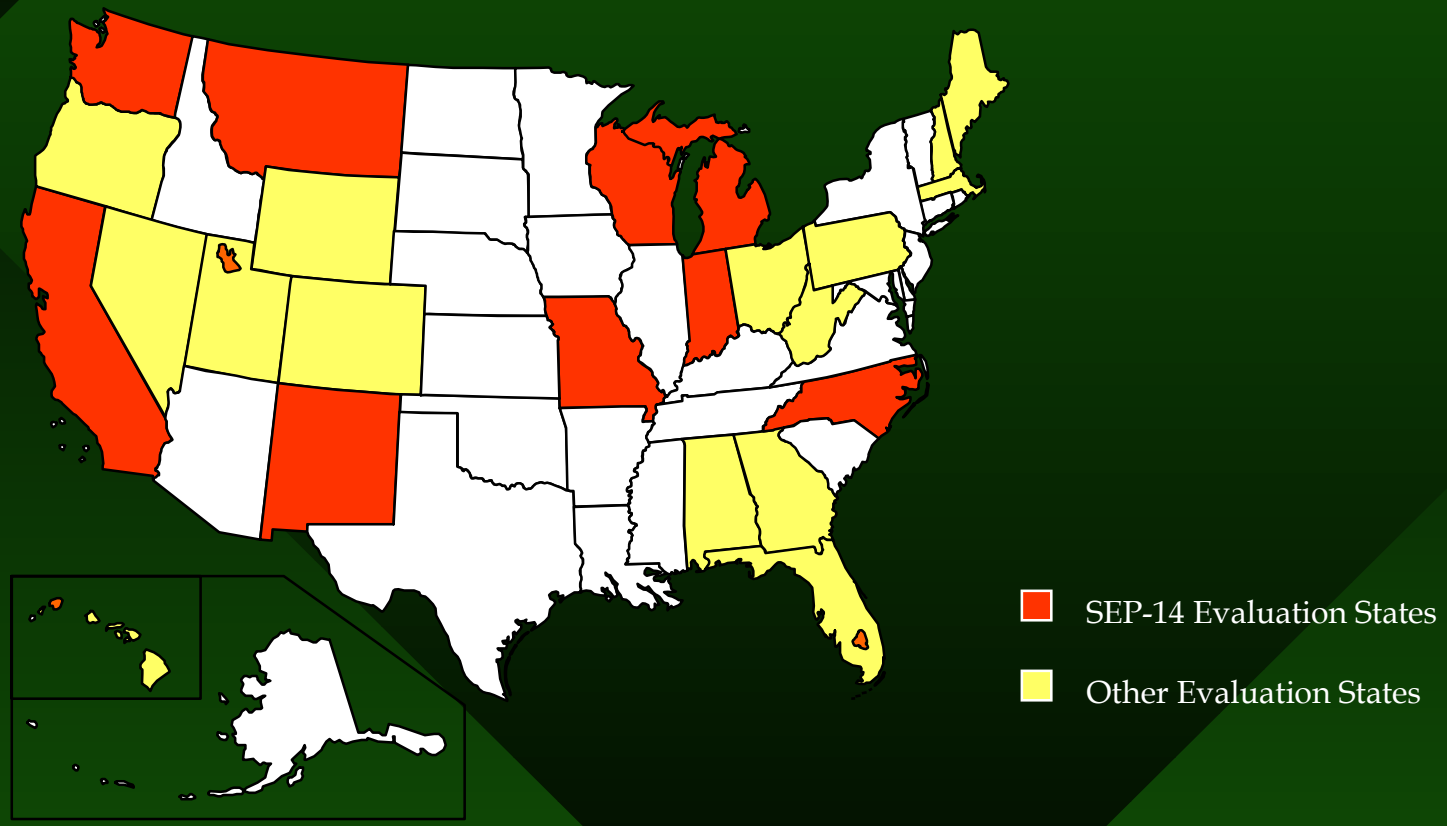
Indiana's Quality Steps

- ??-1986 generic HMA Specifications
- 1986- QC/QA for Marshal Mixtures
- 1991- Initiated Superpave Process
- 1994- Initiated CAPP
- 1996- Initiated ASC, HMA Warranties
- 1997- Initiated Certified HMA Plants
- 1997- Fully Initiated Superpave System

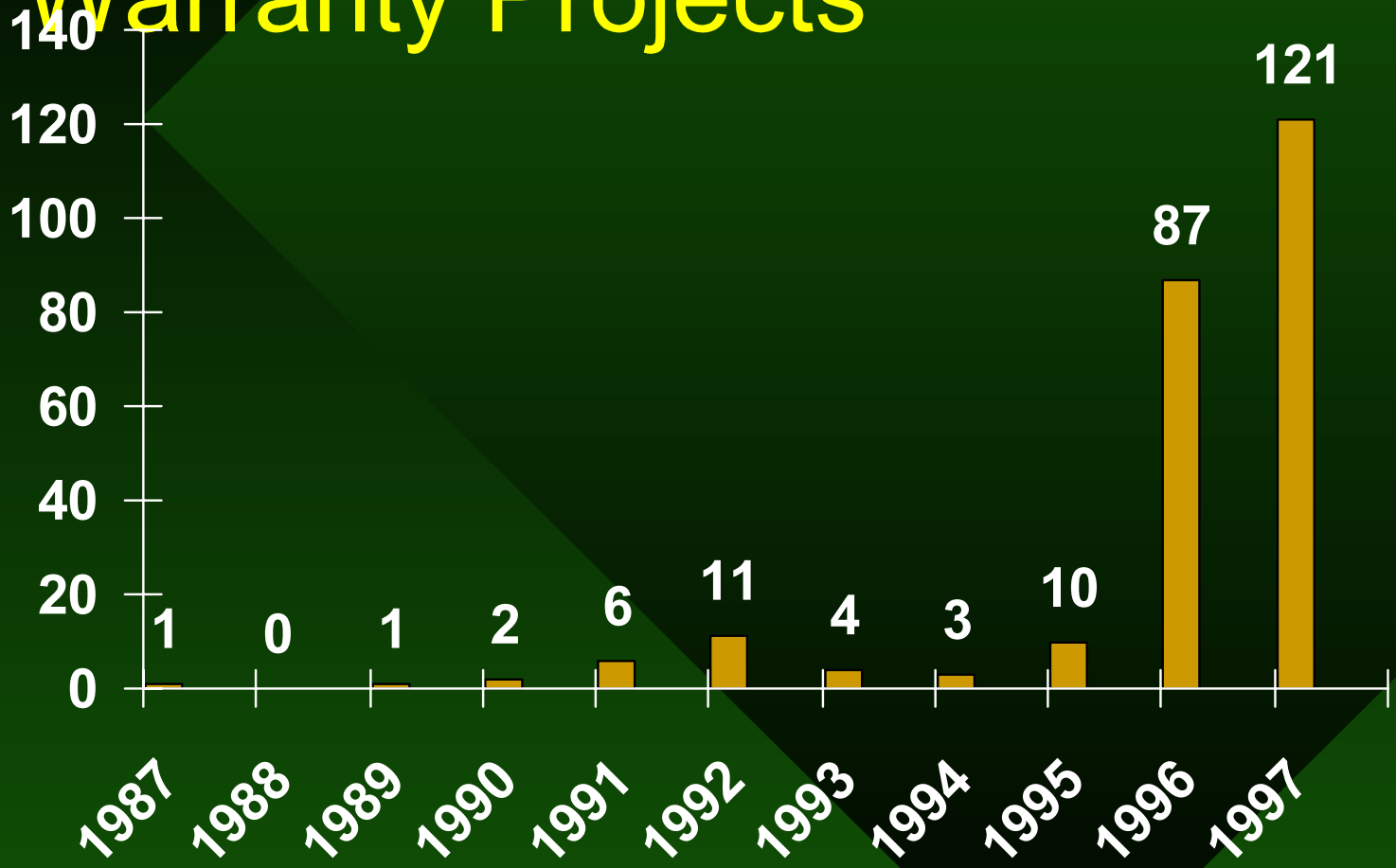
Agency Reasons for Using Warranties

- Reduced personnel on projects
- Eliminate early maintenance costs
- Replace loss of state expertise
- Increase quality
- Encourage innovation

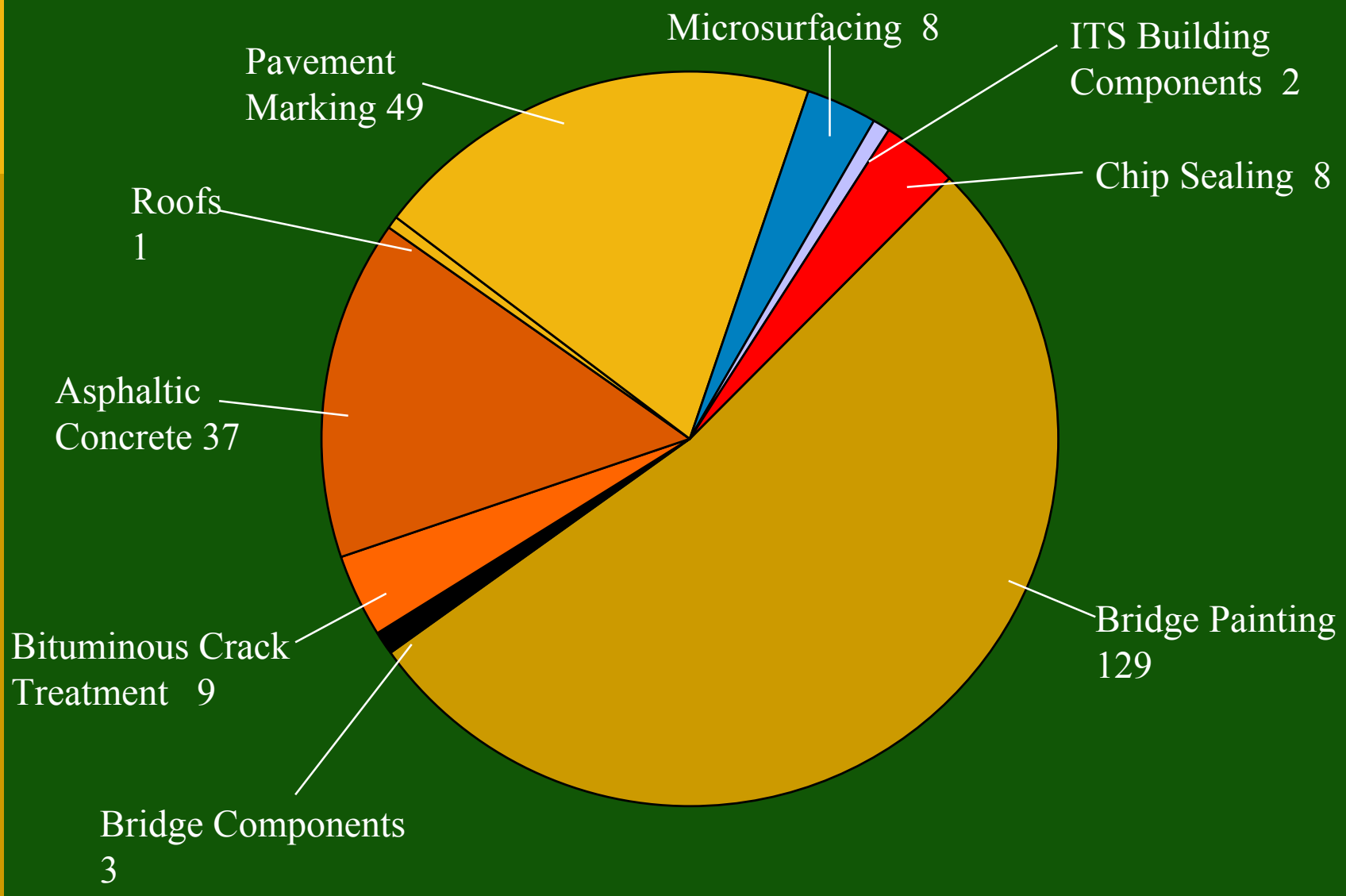
Warranty Evaluation States



NCHRP National Survey Number of Completed Warranty Projects

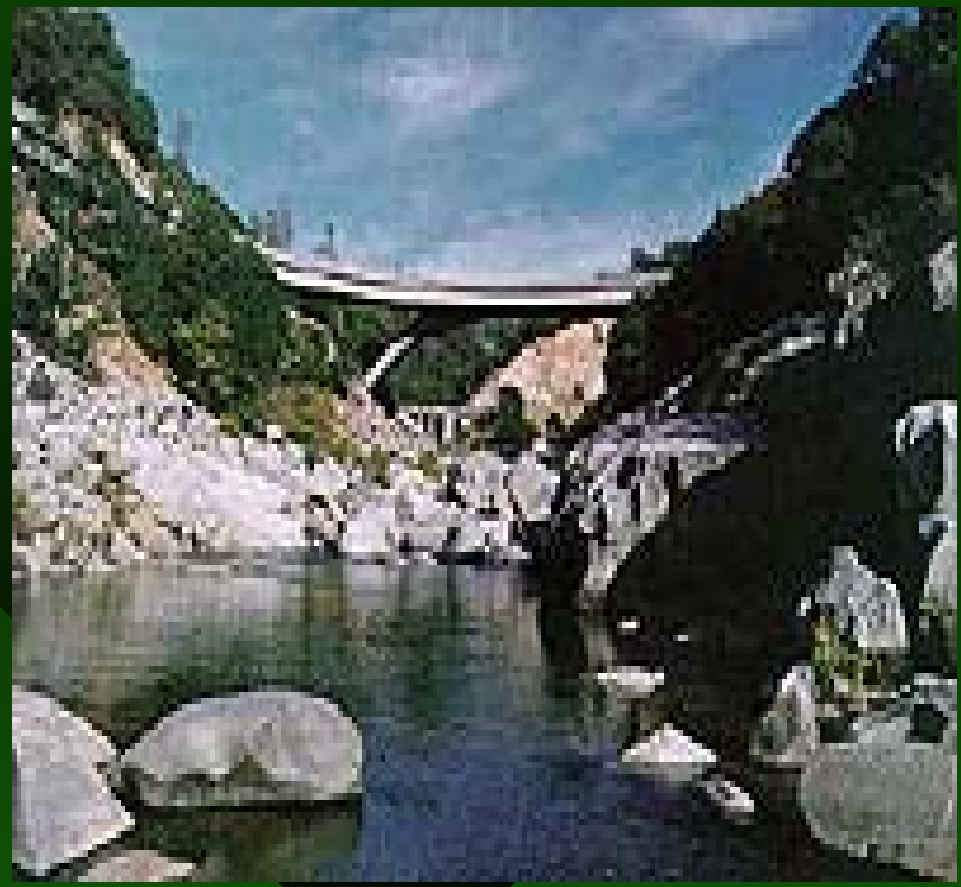


Types of Warranties



Warranty Concepts

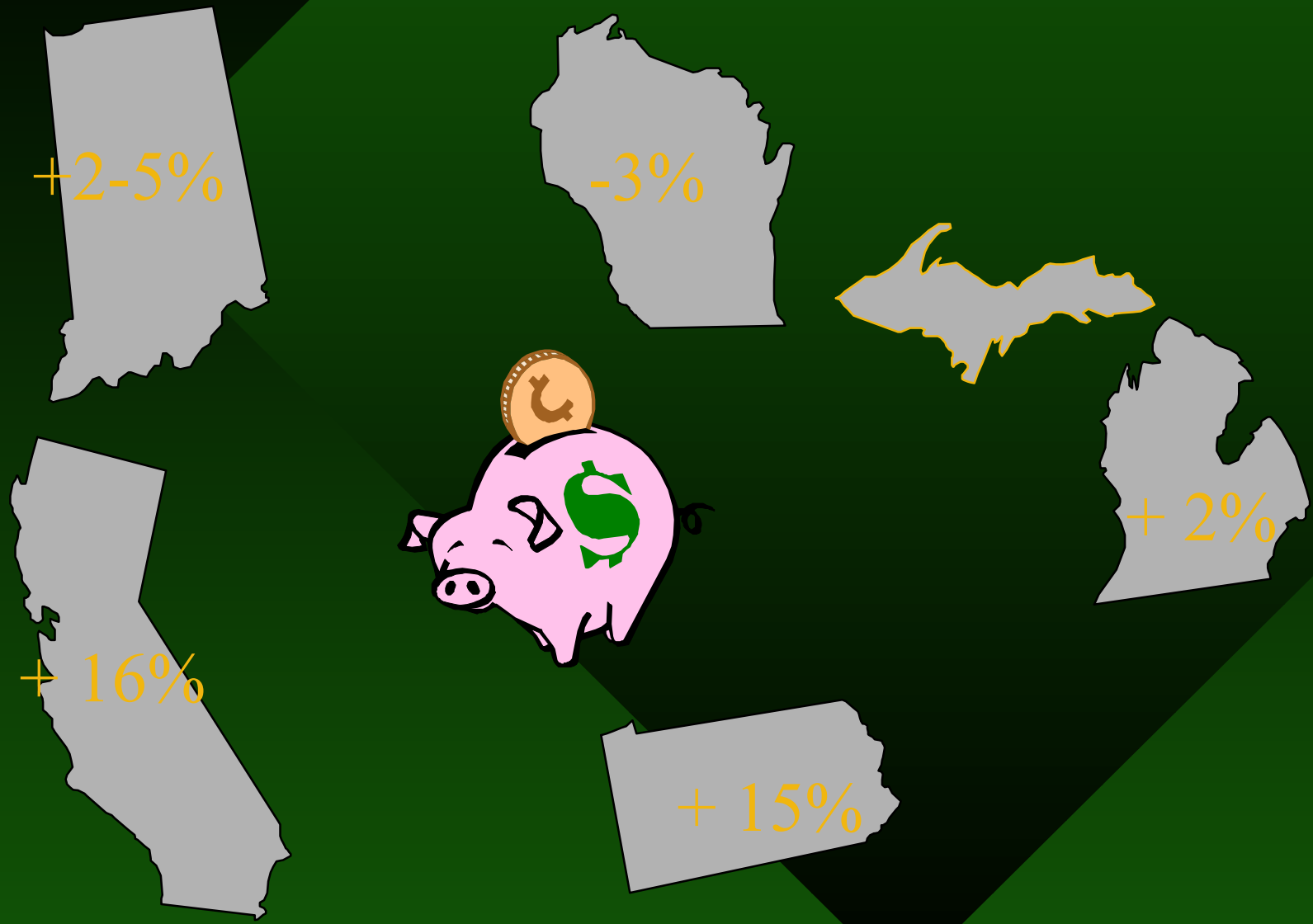
- **Against Defects**
  - Deformation , Cracking , Raveling , Rut
- **For Performance**
  - Ride Quality, Skid



Warranty Length ??

- Premature Failure
- Full Design Life
- Different Opinions

Additional Cost of Warranties ?



3. Warranty Development Process

- Joint Industry/DOT/FHWA Team
- Utilize Existing QC/QA Processes
- DOT Pavement Evaluation Processes
- Establish Warranty Criteria (Objective vs. Subjective)
- Partner with Bonding Companies

Warranty Development Process- Con't

- Evaluate/Compare Warranty Criteria to Completed Projects
- Warranty Length

  (2, 5, 7, 20) years
- Workmanship vs.

  Performance

4. Ingredients for Specification Development

- Open mind with Agency and Industry buy-in is the most critical single ingredient
- Discuss everything openly, especially potential pitfalls
- Include/Incorporate DOT Pavement Evaluation (PMS Data)

Ingredients for Specification Development- Con't

- QC/QA Processes
- Warranty Specification:
  - Warranted Pavement Definition
  - Conflict Resolution Team
  - Warranted Elements (Ride, Rutting, Friction, Cracking)
  - Pavement Distress Indicators, Thresholds, and Remedial Actions
  - Quality Control Plan

Ingredients for Warranty QCP

- Certified/Qualified Technicians
- Mixture Design Methodology
- Materials, Sampling and Testing
- Plant Operations
- Laydown Operations
- In-Place Density Testing
- Independent Assurance Testing
- Documentation

5. What is Specified by the Agency in Warranty Specifications – Indiana

- Minimum Aggregate Requirements (LA, Crushed Count, FAA, F&E, Soundness, Deleterious)
- Minimum Grade of Binder
- ESAL's
- Typical Section and Quantities
- Smoothness
- Condition Survey

Indiana Specification

A + B + C

A - Unit Prices

B - Time Cost

C - 5 Year Warranty

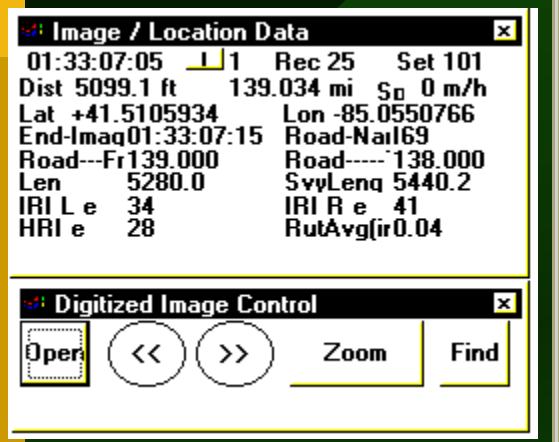
Warranty Items ?

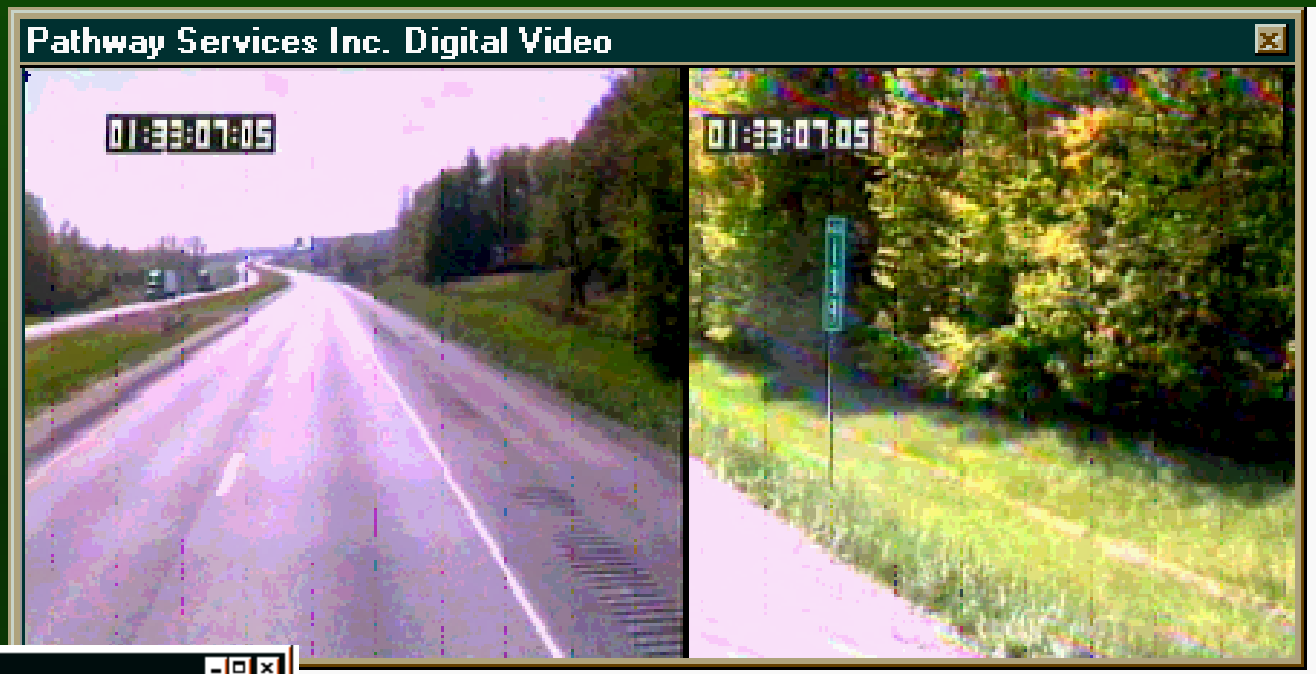
- Customer Expectations (NPHQ)
  1. Ride
  2. Safety
     - → Friction
     - → Rut depth
  3. Delays (In-Out-Stay Out)
     - → Quality

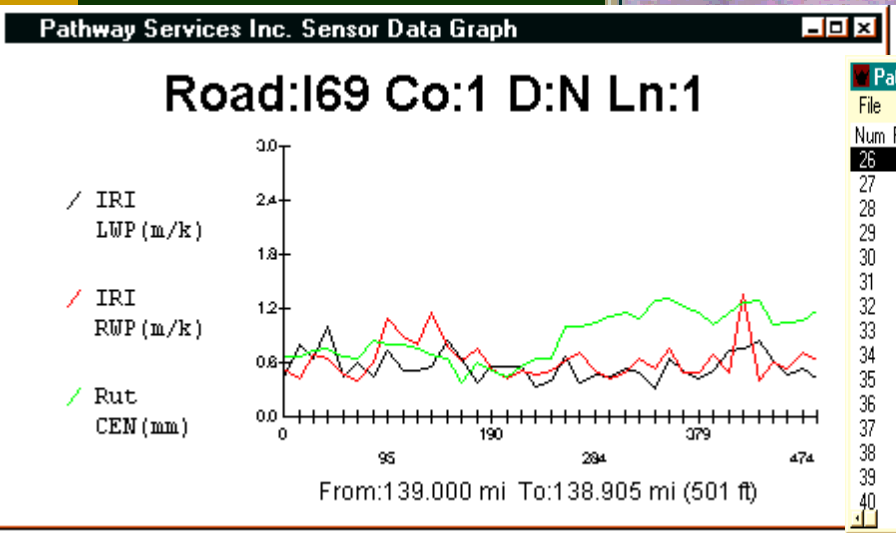
Indiana Warranty

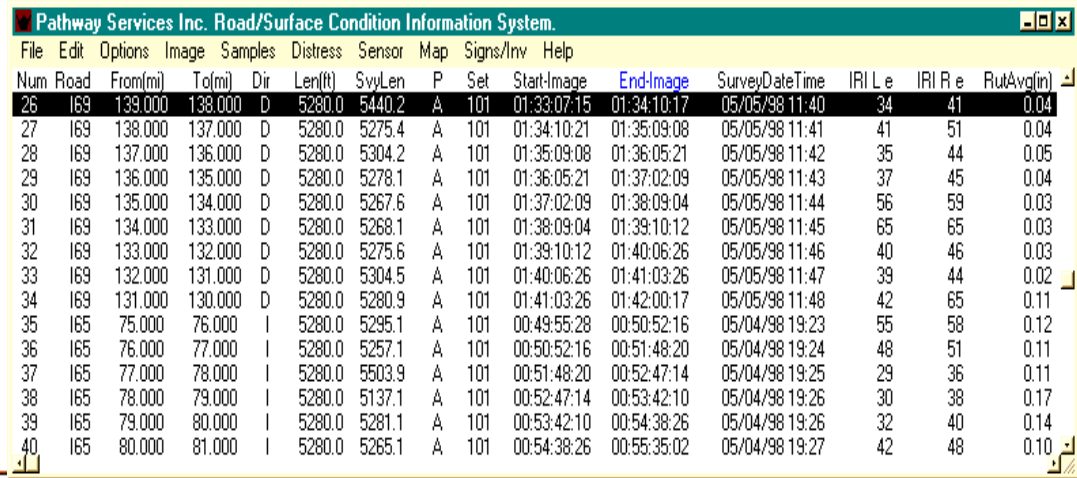
- Ride
- Rut Depth
- Friction
- Longitudinal Cracks

Warranty Data









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40	I65	80.000	81.000	I	5280.0	5265.1	A	101	00:54:38:26	00:55:35:02	05/04/98 19:27	42	48	0.10

Thresholds

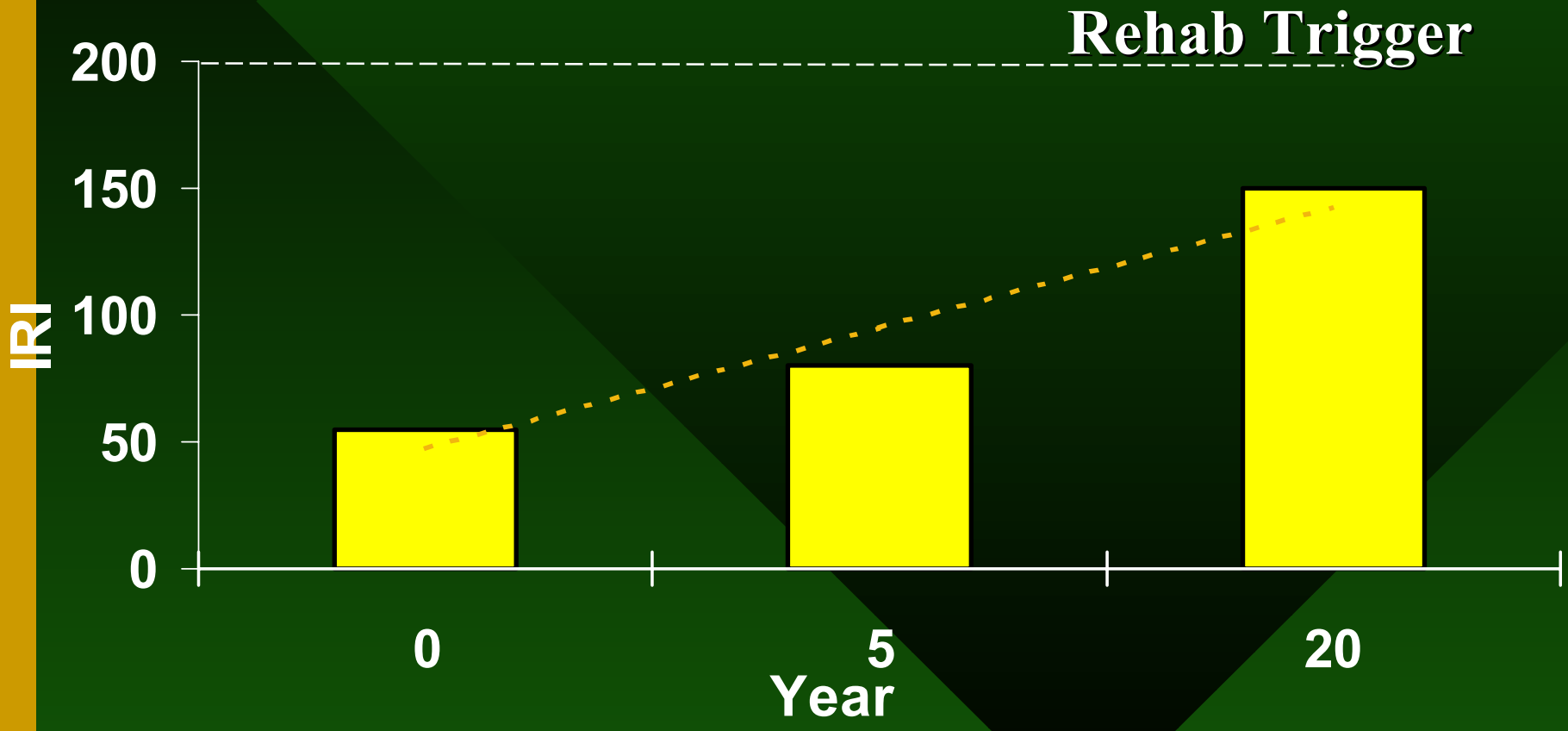
- Ride (IRI) 1.4 m/km
- Rut 6 mm
- Friction 35 / 25
- Longitudinal 0 m Level 2

Ride

- Average IRI in 100 meters <1.4 m/km (90 in/mi)
- Laser Profiler
- Bridge, Approaches excluded

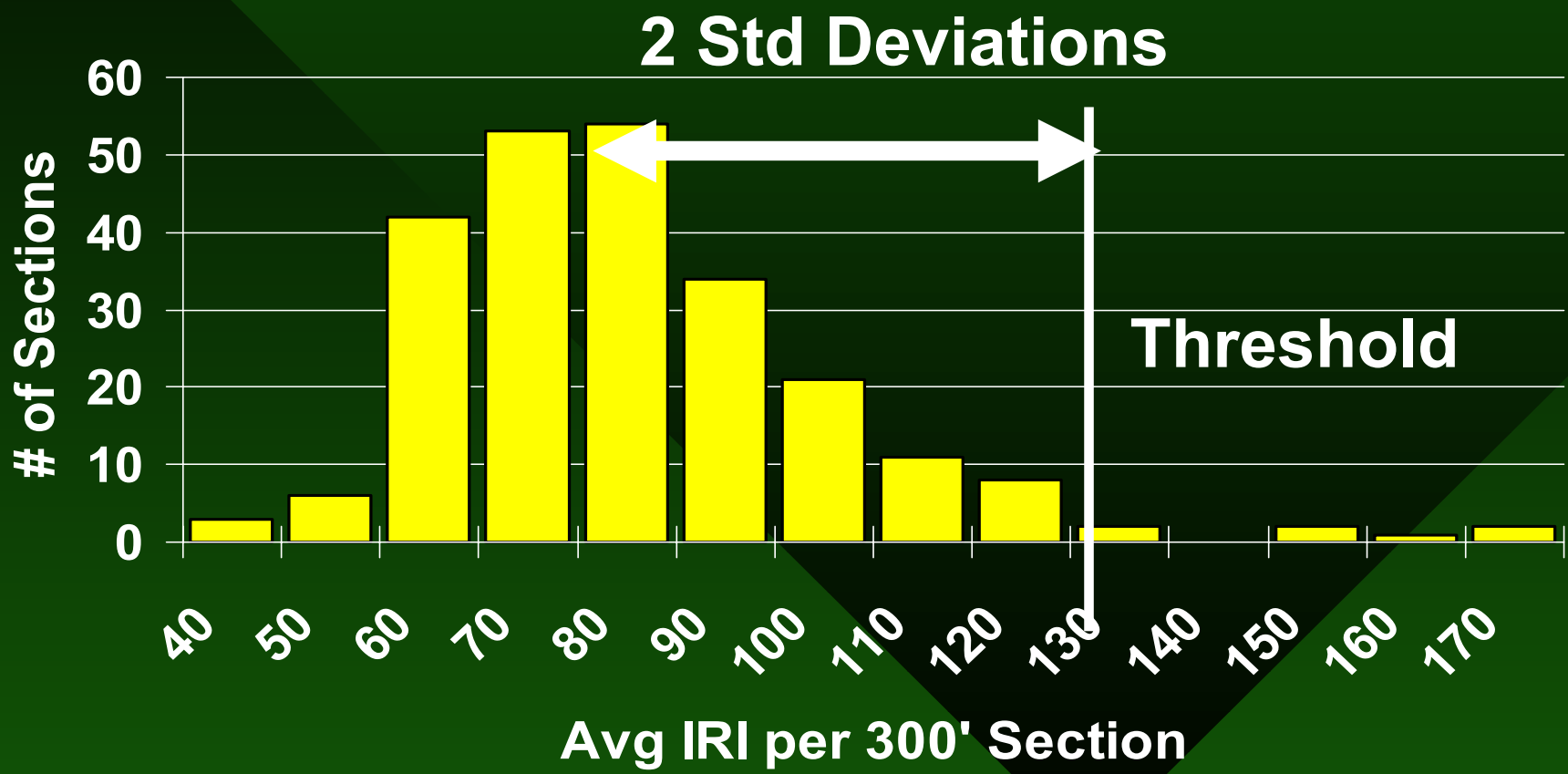
Ride

5 Year Goal for 20 year fix



Ride

5 year old pavements, 100 meter segments

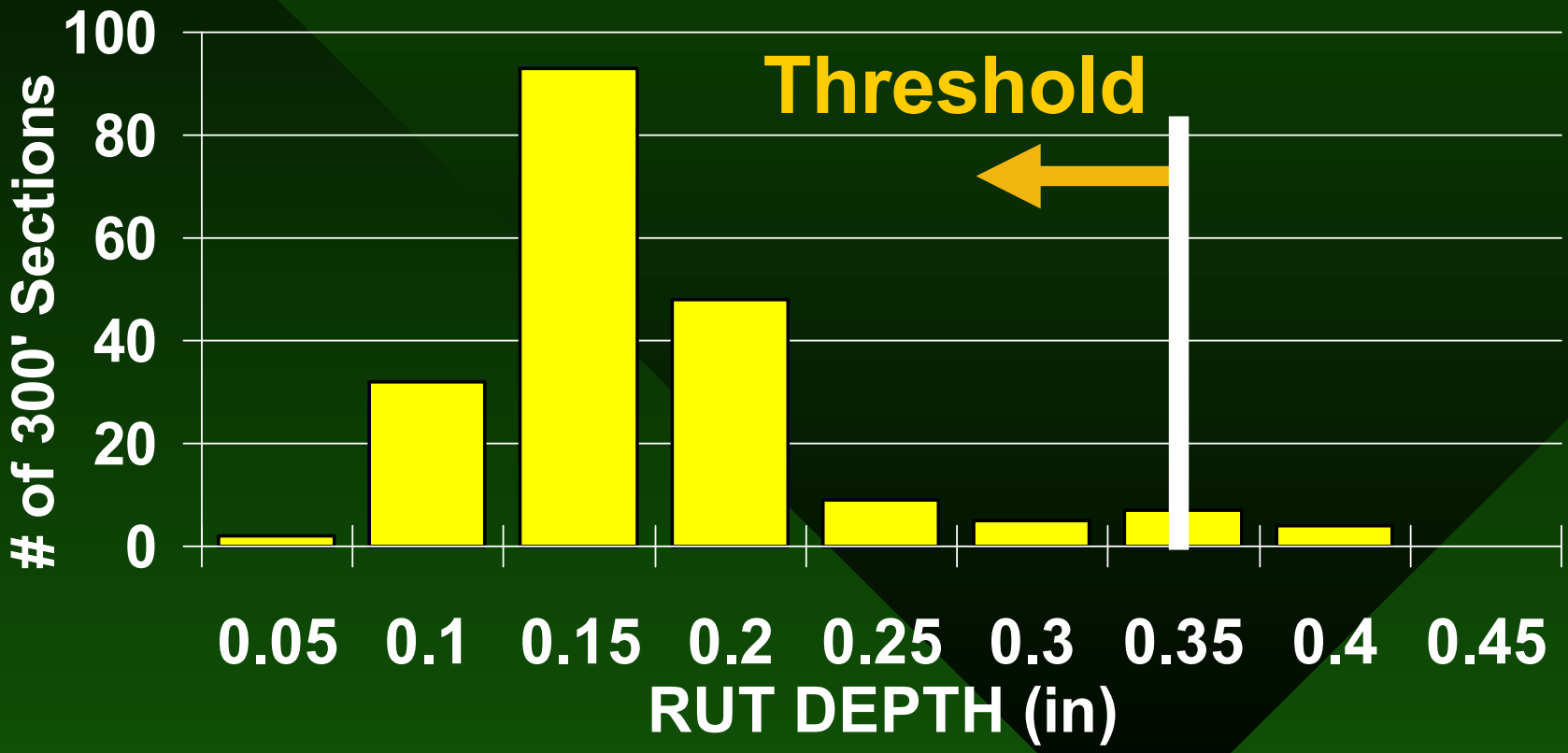


Rut Criteria

- < 6mm (1/4”) in any 100 meter segment
- Measured with Roughness
- Entire Length, Driving Lane

Rut Criteria

5 year old pavements, 100 meter segments



WARRANTY BOND

- Preset Value
- Cost of Surface

Liability Limitation

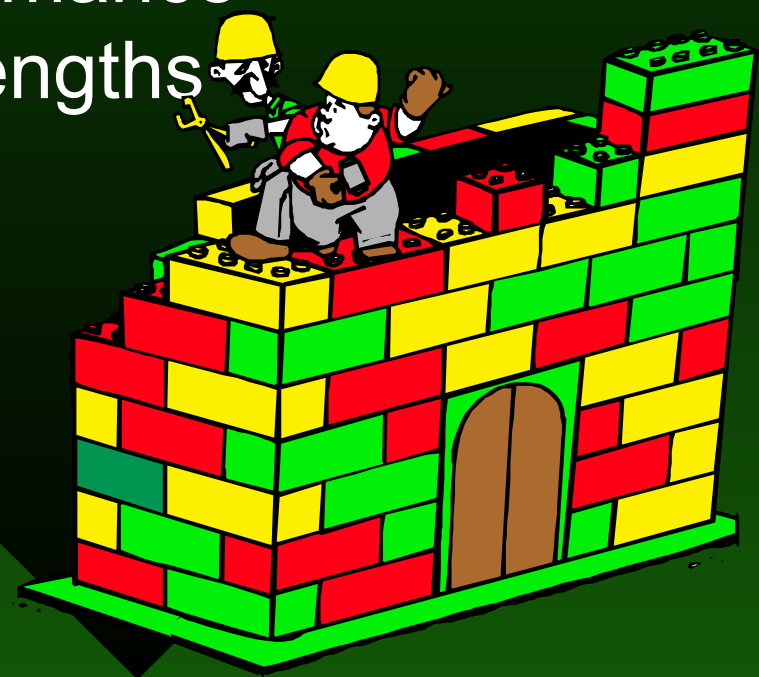
NONE

BENEFITS

- Success = Performance
- Risk Balanced
- Innovation Rewarded
- Non-Confrontational Construction

Warranty Lessons Learned

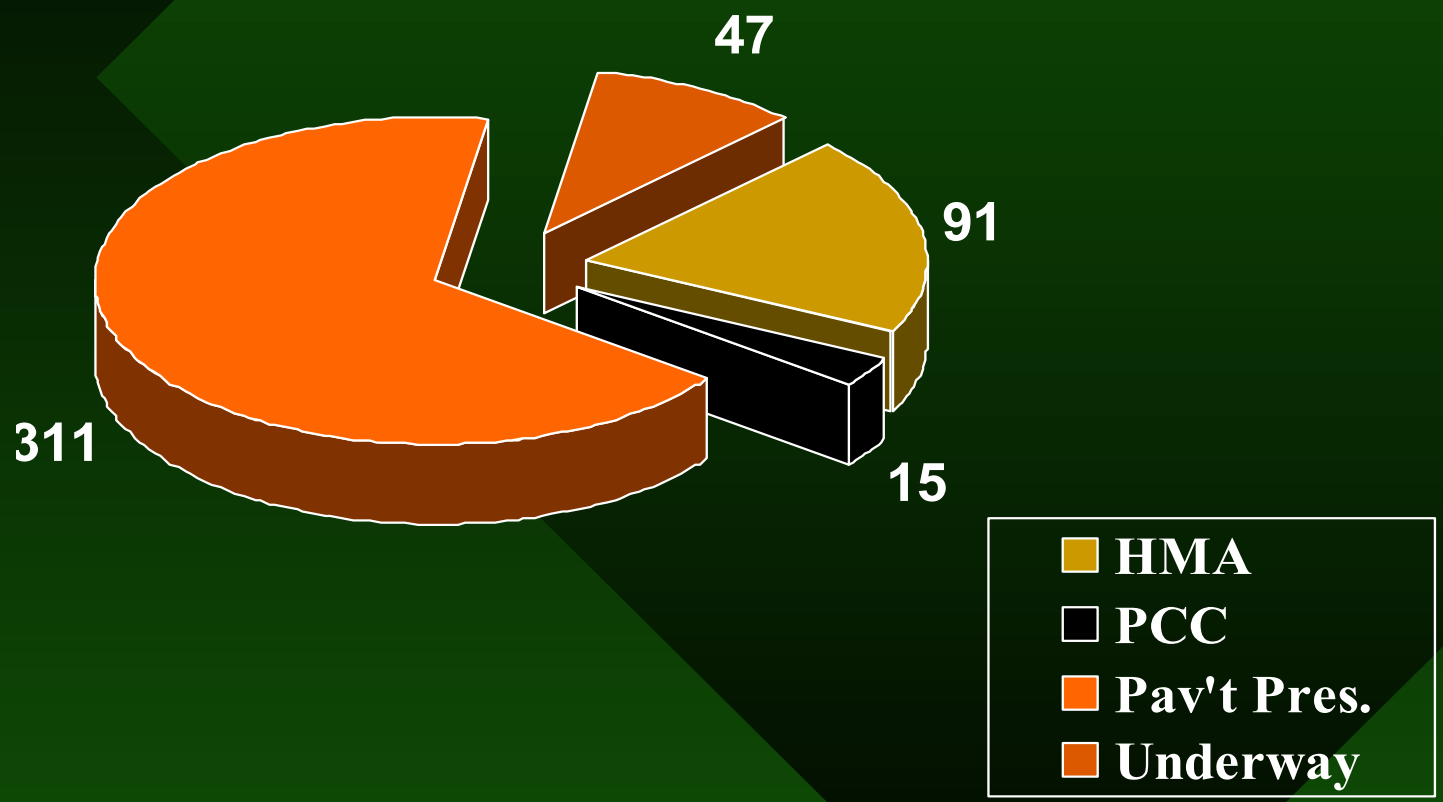
- Should be used appropriately
- Not for routine maintenance
- Choose reasonable performance indicators, and warranty lengths
- Coordinate with industry



MRC Summary of Warranty Contracts

- ✓ **9 of 12 states have had a Warranty Project**
- ✓ **8 States have had 5 or more Projects**
- ✓ **8 States plan to do more projects within the next 3 years**
- ✓ **6 States , IL, IN, MI, MN, OH & WI lead in number and extent of Warranty Projects "Primary Users"**

Types of Warranty Projects in MRC Area



Characteristics of “Primary Users”

- Higher Use Expected over Next 3 Years
- Warranty Life – 3-17 years (common 5 yrs)
- Fixed Bond Amounts Vary - $8K - $35K /mile
- Movement to Actual Replacement Cost
- No Problem Seen with Ability to Obtain Bond
- Limited Total Cost Analysis Completed

Recommendations

- ✓ Get Involved!
- ✓ Insist on Some Level of Inspection!
- ✓ Understand Performance Measures!
- ✓ Assess Contractor's Ability!

The Future for Innovative Contracting

- Contracting methods will continue to change
- Fewer State DOT employees
- More $$
- Higher public expectations
  - More customer focus
  - Get In, Get Done, Get Out, STAY OUT!
- More innovative contracting

THANK YOU